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Towards a More Effective Hybrid Workforce Culture in a Computationally Focused Research Center

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ABSTRACT

It is essential to Sandia National Laboratory's continued success in scientific and technological advances and mission delivery to embrace a hybrid workforce culture under which current and future employees can thrive. This report focuses on the findings of the Hybrid Work Team for the Center for Computing Research, which met weekly from March to June 2023 and conducted a survey across the Center at Sandia. Conclusions in this report are drawn from the 9 authors of this report, which comprises the Hybrid Work Team, and 15 responses to a center-wide survey, as well as numerous conversations with colleagues. A major finding was widespread dissatisfaction with the quantity, execution, and tooling surrounding formal meetings with remote participants. While there was consensus that remote work enables people to produce high quality individual and technical work, there was also consensus that there was widespread social disconnect, with particular concern about hires that were made after the onset of the Covid-19 pandemic. There were many concerns about tooling and policy to facilitate remote collaboration both within Sandia and with its external collaborators. This report includes recommendations for mitigating these problems. For problems for which obvious recommendations cannot be made, ideas of what a successful solution might look like are presented.

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Nomenclature

remote worker a Sandia employee who works at Sandia by joining via digital means rather than physically coming to an office location, with rare exceptions

telecommuter a Sandia employee who works at Sandia by joining via digital means for some of the time and by physically coming to an office location at other times

onsite being physically on the premises of Sandia

hybrid meeting a structured gathering which consists of attendees who share a room onsite and attendees who are joining via videoconference (such as MS Teams)

virtual meeting a meeting in which all attendees are joining from individual videoconferencing accounts

SRN the Sandia Restricted Network

SON the Sandia Open Network

CCR the Center for Computing Research, Sandia Center 1400

LDRD Laboratory Directed Research and Development funding, a mechanism to secure funding at Department of Energy laboratories

MOW Member of the Workforce

MS Teams Microsoft Teams, a popular digital collaboration tool

OAA Office Administrative Assistant

1. INTRODUCTION

1.1. Introduction

There is substantial literature available on the topic of remote work and hybrid work, particularly following the onset of the Covid-19 global pandemic. A good overview of this literature may be found for remote and hybrid scientific work in [4]. This review notes that the primary replacement for synchronous in-person interaction has been videoconferencing, with a wide variety of platforms used for instant messaging and document sharing to perform asynchronous collaboration. It also notes that in addition to the technological challenges of organizing work, there were changes required for social organization. Within Sandia, a recent survey concluded that while remote work positions improved recruitment, organizations are still figuring out the hybrid work approach [1]. However, [1] focuses primarily on the needs of remote workers without considering the needs of either onsite or telecommuting workers. Similarly, in a paper describing the transition to fully remote work for a particular multi-institution mission (the Exascale Computing Project or ECP), strategies are offered for working fully virtual [3]. No literature that could be found indicates that hybrid work is a “solved” problem, and few works even provide actionable recommendation rather than observation.

1.2. Data and Inference Gathering for the Current State of Practice

The Hybrid Work Team was chartered in February 2023 and assembled for the first time on March 30th to develop recommendations “to ensure [we create] a hybrid culture to support the workforce of today and tomorrow” for the Center for Computing Research (CCR). Early on, the team decided to meet weekly to discuss, and determined that additional data were required in order to ascertain the current practice of hybrid work within the center. While informal discussions with other colleagues helped to add more insight, the team ultimately decided to perform a survey (see A.1) via email to CCR MOWs. 15 responses were received, for a total of 24 people providing input on hybrid work at CCR. While this is a small sample size (24 of approximately 300), there was a diversity of roles (such as manager, office administrative assistant, postdoc, and research and development roles) and a wide range of time at Sandia (3 months to over 30 years). Note that no individuals indicated that they were onsite 100% of the time, but there were several who self-identified as either part-time telecommuters or fully remote. However, statistics on this breakdown are not included due to a low response rate overall to remote status.

The working group worked quickly to identify problems and attempt to categorize them. While there were broad themes of meeting-related problems, collaboration bottlenecks, and concern about social connection, there were also smaller themes such as execution of classified work.

Discussions at weekly meetings focused on converting the identified problems into actionable recommendations where possible. An initial pass at recommendations was done ahead of a Center Leadership retreat, resulting in a one-page summary of recommendations so far (which may be seen in A.2). Following this one-pager, more recommendations were broken down in advance of a presentation for the CCR leadership team. The presentation format was a countdown of shorter recommendations, included in A.3 as a table. It was determined that the team had so many recommendations and observations that they would not fit neatly into one presentation, and so this report was written to capture the group's best efforts at ascertaining the state of practice at CCR and potential recommendations for improving hybrid work.

1.3. Hybrid Work Successes

Though a vision is put forward for an even more successful hybrid organization, there are some notable successes so far for hybrid work:

- Workers who are able to regularly telecommute or work fully remotely feel they are very productive, some far more than they would have guessed before the onset of the Covid-19 pandemic.
- Telecommuters and remote workers often report feeling they have more time; often due to the avoidance of commute time or needing to go through the base's gate.
- Recruitment has been improved since some workers may be hired that would not be willing or able to relocate to Albuquerque (including one author of this report).
- Increased inclusion in the workforce, both geographically and socially. People with different mobility or health concerns now have the option of telecommuting frequently or fully remote work.
- Increased access to technical talks, and you can go without fear of appearing rude if you leave because the content is not as relevant as you hoped for large talks. Multitasking on critical tasks while listening in to a talk is also possible.
- Recordings of talks and meetings are much more common, allowing people who could not attend the original to at least view the content. Some people find it helpful to view talks at higher playback speeds and be able to zoom in on slides.

Sentiment for remote work in respondents was generally very positive, with ideas given for improvement; no respondents or committee members argued that hybrid work was a net negative. Overall, this committee has confirmed hybrid work is clearly a different work environment that requires some adjustment by *everyone* for the best outcomes.

2. A VISION FOR ADVANCING HYBRID CULTURE

Though sentiment on hybrid work was generally positive, there were a number of issues reported related to hybrid work. Meetings were such a substantial point of contention that there are several sub-sections devoted entirely to them. Little discussion or response was had for in-person-only meetings, so “meetings” is shorthand for “hybrid and/or virtual meetings” unless otherwise specified. In “Practices and Potential Solutions,” findings that have actionable recommendations are given, with recommendations in-line with each problem. In “Opportunities for Growth,” problems are identified with sample “success stories” inline to spur creativity and help guide strategies for replicating the successes in these stories, even when specific recommendations are not provided.

2.1. Practices and Potential Solutions

Foundational problems are placed near the top so that they are easily referenced by later sections. In general, problems and recommendations cluster onto particular topics. The final section (2.1.10 “Miscellaneous”) contains problems and solutions that lack a distinct topic.

2.1.1. *Hybrid Skills Gaps*

The start of the Covid-19 pandemic also marked a time at Sandia where we switched from using Skype to using Microsoft MS Teams (hereafter referred to as “MS Teams”.) Skype is a video conferencing tool while MS Teams, in its full functionality, is a team communication management tool. With the slow roll-out of MS Teams features, users learned how to make what they needed work, but did not necessarily go back and investigate enabled functionality as it was rolled-out. This caused many people simply to be unaware of how to do things within MS Teams or in a hybrid environment. Below, Table 2-1 demonstrates some problems people raised and existing features or equipment which would eliminate the problem. Equipment is included with skills since often there is a level of skill in using or knowing how to purchase the equipment. This table is not exhaustive, but seeks to give some indication of the sorts of problems that are solvable with little effort on CCR’s part.

While these gaps exist, the working group noted that people are likely to just ignore “another TEDS module.” Furthermore, it is often difficult for people to retain skill-based information off an article or video. After some discussion, it was determined that only a format that was interactive was likely to help people learn these skills successfully. Due to the prevalence of hybrid or virtual meetings, such skills are essential to effective communication within CCR. It is often the case in technical groups that there is some subset of “superusers” who are more aware of

Problem	Solution
Too many video faces to track	“Turn off incoming video” or “Pin Speaker”
Too many notifications	Team-granular notification thresholds
No virtual whiteboard	MS Teams Virtual Whiteboard
Audio feedback	Sandia-approved headsets
No way to get speaker attention	“Raise Hand” teams feature
Need to schedule meeting to talk	MS Teams Audio/Video direct call feature
Cannot view presentation and chat	Two-monitor setup

Table 2-1. Hybrid problems and existing skill/equipment solutions

the features of a given tool; it may be possible to seek these out for MS Teams and engage them in helping others learn how to use it more effectively.

Recommendation 1: *Devise and require interactive training for hybrid skills and equipment.* CCR should devise an interactive training module or set of sessions for hybrid skills which additionally highlights potentially useful equipment, and participation in this training should be mandatory for all. It may be useful to engage “superusers” in developing this.

It may also be noted that one hybrid skill is hybrid learning. Many workforce training programs are tailored to in-person learning, such as the Weapons Intern program. Such classes can only be done in person, yet are often taught for a few hours a few times a week for months. This makes it impossible for remote employees to participate if they are not at a Sandia site.

Recommendation 2: *Consider compressing workforce training.* Workforce training programs should (also) be offered as a full-time class on consecutive days so that remote employees can travel to participate.

2.1.2. Camera Usage

Though dissatisfaction with meetings was the most universal issue, camera use for virtual meetings was the most controversial, with many strong opinions on opposite sides. There were some individuals who felt that other people should be turning on their cameras all the time with one noting that “there was no excuse not to,” sharply contrasting with opinions that people should avoid turning on their cameras at all. More commonly, the opinion was expressed that individuals should have a say in whether or not they used cameras.

There were relatively few reasons given for mandating camera use. There were two individuals who independently argued that giving presentations to a group where no cameras on was very difficult and anxiety-provoking; however they did not indicate that they thought the entire audience should have cameras on, rather that at least some cameras should be. Another individual expressed that using cameras could help with communication. Some individuals proposed that only active speakers should have cameras on, so that it would be easier to follow discussion. This is a potential alternative to the “raise hand” feature to show the speaker that you have something

to add, but does not preserve the order in which potential speakers appear, unlike “raise hand.” One of the reasons for requiring camera usage implied by a survey respondent was that they wanted to make sure everyone was paying attention, which is difficult to monitor without video.

Only one individual, including the survey respondents and the authors of this report, advocated for requiring cameras to be turned off, and this was due to this individual’s desire to not have to see incoming video; it should be noted, however, that the most prolific videoconferencing service allows users to disable incoming video anyway (see 2.1.1 for a longer discussion on hybrid skills gaps).

Most individuals commenting on cameras articulated the opinion that people should get final say on camera use, with some noting that the only reason they turn their camera on is because they feel they are required to (for a discussion on presumed policy see; 2.1.7). Arguments ranged dramatically. Some individuals felt that it was easier to allocate attention to the part of the meeting they were needed for, and then refocus on other work when not needed to avoid appearing rude (indicating a more general problem that some meetings require/request attendance from people who may not have an active role; see section 2.1.4 for a lengthier discussion). Others felt like they couldn’t tell when attention was on them (unlike in-person where the direction people face indicates whether you are being watched) and didn’t like feeling like they had attention on them for the entire day (indicating a proliferation of meetings; see 2.1.3). Others offered no particular reason for wanting to turn their camera off, but felt it was unreasonable to require them to turn it on.

There is wide disparity in the psychological stresses that different individuals feel, both using and not using the cameras. Requiring a strict universal policy may severely impact people with certain forms of neurodiversity, and run counter to diversity and inclusion goals. In a recent study by Das et al [2] on the impact of remote work on neurodivergent individuals, it was noted that

A striking finding from our analysis is the highly individual and, at times, conflicting access needs across our informants. For instance, some of our participants prefer to have their video turned off to hide their stimming activities. Others, however, find watching meeting partners’ video feeds necessary for piecing together nonverbal cues, complementing closed captioning with lip reading, and maintaining a sense of accountability to avoid zoning out.

There was little awareness of this among survey respondents, and we recommend raising awareness that people have legitimate differences in preferences and needs. This is one of the strongest arguments for individuals having final say on their own camera use.

<p>Recommendation 3: <i>Encourage mindful camera usage and individual choice.</i> Encourage CCR teams to be mindful of camera usage and how it will impact the flow of meetings, as well as individual and issue a policy that individuals have final say in camera use.</p>

2.1.3. *Quantity of Meetings*

There is a high level of dissatisfaction with the number of meetings at Sandia and within CCR. Meeting proliferation was a topic of considerable scope and contention. One survey respondent articulated it as a “vicious cycle” wherein there are so many meetings that it is difficult to get someone’s response without scheduling a meeting, thus further proliferating the number of meetings for all involved parties. Many people articulated that they feel they spend their entire day in meetings. One observation is that the amount of time spent in meetings seems to increase rapidly with the number of projects since most projects want all participants to attend several meetings regardless of allocation; thus, it is common for someone working on several projects to quickly be confronted with many meetings. Since it is common in CCR to work on multiple projects, this means that it is common to be faced with this meeting proliferation.

There are a number of illustrative examples for the scope and scale of the problem:

- One committee member said they had a colleague who felt that they would need to work overtime on the weekend to do all the work that had been postponed due to meetings.
- The working group of nine members could not schedule a regular meeting where all members could attend; instead, it had to schedule them on a weekly basis based on that week’s availability, trying to mitigate consistently excluding the same members.
- One respondent temporarily went to half-time, and found that they spent their entire workweek in meetings, without being able to do anything else in their allocated time. Even when they blocked out time with label “NO MEETINGS,” people would frequently invite them to meetings during those blocks.
- Double-booking is so prevalent that some people observed that if a meeting was canceled, they just went to a different meeting instead.

Despite some observations, there seems to be relatively little insight into why meetings have proliferated so much. Even more alarmingly, despite this vast quantity of meetings, there is still a sense that remote workers are not well-connected with their peers (see 2.1.6 for a longer discussion). While the scope of the working group is limited to CCR, it was also articulated that this is a Sandia-wide problem, which encroaches on CCR’s ability to respond. Additionally, because CCR contains many workers with external collaborators who would not be subject to its policy, its workers may de facto have to have meetings even on “meeting free” days if that policy were brought forward.

Because people feel that their schedules are so heavily packed with meetings, it reduces their ability to meet project needs with non-meeting work. It also means that proposed solutions to any other problems in CCR that include a new meeting will be regarded as a major imposition.

<p>Recommendation 4: <i>Investigate more efficient information transfer.</i> CCR should study ways to transmit information quickly and efficiently within a hybrid organization to reduce the number of meetings required.</p>

There are defaults within MS Teams (the most common meeting platform at Sandia) that may unnecessarily extend meetings, contributing to proliferation in time. MS Teams' default timestep is 30 minutes, which may be far too much time. It may be possible to have productive meetings in 15-minute increments, which would free up more time and allow meetings to be clustered or separated more easily if desired. People often use "defaults" in practice, so setting a default that is a smaller time increment may lead to shorter meetings. Another recommendation from HR to help deal with stress and meetings overloads is starting 3 to 5 minutes after the start of a slot (e.g., 5 after the hour) and end 5-10 minutes before the end of the slot to give a little time back. In MS Teams, these behaviors are nonstandard and therefore require some effort to implement.

Recommendation 5: *Remind CCR that defaults may not meet needs.* Reiterate to CCR that MS Teams meeting defaults and features may not meet meeting needs, and encourage people running meetings to allow for strategies such as padding meeting start times for small talk and ending before the scheduled MS Teams meeting end (though not after).

2.1.4. Quality of Meetings

In addition to widespread dissatisfaction with the quantity of meetings, there is substantial dissatisfaction with meeting quality. Some of these contentions are related to the hybrid or virtual nature of meetings, but others are related to general meeting principles.

For hybrid meetings, there was consensus that many spaces onsite are not conducive to hybrid meetings. Particular complaint was given to CSRI Room 90. There appear to be capability gaps in the spaces used for hybrid meetings. For example, in some conference rooms it is difficult to hear all in-person attendees due to microphone placement and/or quality. In addition, some conference rooms do not have a way for in-person attendees to view the text chat that virtual attendees may be using. Even for office spaces, since many offices are shared spaces, it can be difficult to attend meetings because other people in the office are likely to also have meetings at the same time (see 2.1.3).

Recommendation 6: *Improve conference room capability and reliability.* Ensure that all conference rooms are easy and reliable to use. Consider adding or revising equipment so that hybrid meetings can be held effectively.

Recommendation 7: *Experiment with flexible room scheduling.* Experiment with flexible scheduling for conference rooms for people to be able to attend meetings outside of their office, and use this scheduling to inform future scheduling policies.

One individual noted that many meetings do not have an agenda, which is a general best practice for any meeting. It was also discussed that some meetings run longer than they need to just because the time is scheduled. Some observed that due to the pandemic, some meetings began to include social components to them, but that those social components may be less needed now that the pandemic emergency has subsided. Additionally, some felt that many meeting participants are not actively participating, and instead working on other projects during the meeting (most likely due to the proliferation of meetings), reducing information transmission and meeting efficiency.

Leaving meetings early is already acceptable in a sufficiently large meeting (see 1.3), but leaving small meetings appears to be viewed as justified only by going to a different, fully or partially overlapping, meeting.

Recommendation 8: *Foster mindful meeting practices.* Remind CCR that successful meetings employ meeting best practices. Typically this includes setting an agenda, setting ending criteria, and considering whether every agenda item really needs to be present.

Recommendation 9: *Remove expectations for full-length meeting attendance.* Foster a culture that allows people to enter and exit meetings as they are needed, rather than requiring the full presence of all invitees at the same time, to increase meeting fluidity and reduce the chances that someone feels a need to be “present” even if they are not needed.

2.1.5. **Effective Hybrid Collaboration**

While this could be considered related to meetings, hybrid collaboration is something that many people were very concerned about independent of meetings. One individual said that they had not found a reasonable whiteboard solution, even though they had tried the MS Teams whiteboard, because the equipment they had (a tablet) was too small to do large equation work. There was general dissatisfaction for whiteboard solutions, with the main issue being the need for a large surface in which all people could write simultaneously. While solutions such as placing a whiteboard in camera view and using it can help close the gap, it ultimately bottlenecks work to have to verbally explain rather than write or highlight when discussions move quickly. Some products that would potentially address this are available through approved purchasing channels, if requested (not in the online catalogs), but are all intended for wall mounting only, limiting installation choices. An example of this is the Dell C5522QT 55" Touchscreen Monitor,¹ which is marketed as a large touchscreen monitor to use for team collaboration such as whiteboarding and drawing sketches.

Recommendation 10: *Investigate digital whiteboard solutions.* CCR should investigate large touchscreen whiteboard solutions, both for onsite and remote workers. Replacing whiteboards with these monitors in offices should also be considered.

Some collaboration concerns were tied into more broad social concerns, such as the loss of “water cooler” conversations that are difficult to replicate in a hybrid environment. This is not limited to remote workers; workers who come onsite often note that it is so rare for there to be a critical mass of other onsite workers, that they do not experience as much organic interaction as they would like. Pre-pandemic, individuals offices (in CSRI) were purposely located far from other department and team members, with the goal of encouraging hallway interactions. Post-pandemic, with sparsely populated buildings, this is no longer effective, and it would be more helpful to group teams and departments close together. Though this will not help remote workers, it seems that onsite spaces do not facilitate these interactions well in their current state.

¹<https://www.dell.com/en-us/shop/dell-55-4k-interactive-touch-monitor-c5522qt/apd/210-ayzl/monitors-monitor-accessories>

Recommendation 11: *Reimagine CCR space layouts.* Experiment with alternative office configurations, including “team collaboration spaces.” Try starting with small, medium, and large team rooms, and allow them to be flexibly scheduled. Study the usage of them to figure out what approaches and configurations are most effective. Try to group teams close together to overcome the relative sparseness of in-person workers.

Some tools are not allowed or are not fully supported by Sandia but would help CCR workers collaborate more effectively. For example, many workers in CCR use Overleaf, a \LaTeX -based collaborative document creation tool. Currently, there is an instance on the SRN, but this is maintained by only one person and is unavailable to foreign nationals (as they can only access the SON). Additionally, there are widely used tools such as Slack that external Sandia collaborators use but are not supported by Sandia IT. The current tool approval process has denied some of these tools, e.g., the Slack client. Rather than banning these tools, finding ways to sandbox them to enable the collaboration while controlling concerning features, is a better solution. Such tools ease collaboration which is a critical component of mission work.

Recommendation 12: *Improve collaboration tooling.* Identify tools used for both internal and external collaboration within CCR and determine ways of supporting them, and establish a process for continuously evaluating what tools should be supported and at what level.

The advent of remote work has forced the challenge of how to contact someone from a rare case to a common. It can be ambiguous whether email, instant messenger (such as Mattermost/MS Teams), phone call, video call, or other methods are best to reach someone. This stifles collaboration by preventing people from being able to contact each other and resolve matters quickly. It additionally raises the threshold of effort required, potentially deterring people from collaborating at all. When most employees were on-site, short casual interactions were often accomplished by peeking in someone’s office, or phoning their Sandia-provided landline office phone. Even if the person was initially busy, they would often return the office visit or phone calls when they were free. Today, many people do not have a good way to contact others for short or casual interactions. There is no convention.

Recommendation 13: *Provide contact method information.* Establish either consistent approaches to contacting other members of CCR or provide a mechanism for people to easily advertise their most practical contact method being cognizant of things like travel, time zones, and work schedules.

Another idea for effective collaboration is the idea of virtual gatherings wherein all participants create a block of time and agree to be present. Participants leave their cameras and microphones off, working together. However, if somebody needs help, they can unmute and ask the group if anybody knows how to resolve a problem. This results in rapid communication of the problem and a speedy resolution if someone present can help them navigate it, similar to tapping a colleague on the shoulder for a quick answer to a question onsite. Virtual organizations have used these tools for decades. Some teams in Engineering Sciences have had success with virtual team lunches, where team members turn on their cameras and microphones while they eat lunch, where they can casually chat about technical and non-technical topics. Deeper investigation into what tools are available, what features they offer, and what we can deploy needs to be performed.

Recommendation 14: *Organize virtual “office hours” to encourage collaborating among staff.*

Recommendation 15: *Review external practices.* Literature and practice reviews should be performed to study how virtual organizations collaborate effectively, and consideration should be given to deploying similar solutions within CCR.

2.1.6. Concern About Social Connection

There is widespread concern, independent of seniority and remote status, that people are not well-connected socially. Though there are many ideas about how to solve the problem, there is little consensus on what would be most effective. There is also a persistent bias towards using in-person gatherings to do dedicated social bonding, however, this may not be as effective as hoped since for remote workers these gatherings will be relatively rare compared to their daily work at Sandia. In recognition of this bias and potential drawbacks, there are several recommendations for in-person activities.

Recommendation 16: *Increase the number of internal CCR events.* Organize more internal workshops and conferences, such as the Machine Learning/Deep Learning workshop that can offer people a reason to join onsite gatherings and meet each other.

Recommendation 17: *Encourage regular department-level offsites to help build community in person.*

Recommendation 18: *Consider non-Sandia sites for gatherings.* Organize in-person meets in remote locations, e.g. a mixer for Sandians or project retreat. Rotating among locations where remote employees live can increase inclusion over time. Additionally consider adding home regions for remote workers and making this searchable with appropriate protections in place.

Some individuals expressed an interest in gathering with other Sandians at their remote locations. For example, in major cities such as Atlanta, there could be a number of other Sandians. Some people may be locked into a geographic region, but still interested in coming into an office, either with other Sandians or with others generally.

Recommendation 19: *Investigate work from locations other than home.* Investigate the feasibility and potential implementation of remote but in-person work spaces for unclassified work. This includes the possibility of Sandians gathering as a group or individuals using locations other than their home office.

Ideas on connecting virtually were more mixed. While some proposed ideas such as games, it was noted that few games are inclusive of those who don't play video games relatively often. All proposals for socialization included structure, whether through a game, a contest, or at least a meeting theme (such as coffee), perhaps indicating that undirected conversation is not considered an effective strategy. While it is unclear what specifically should be done at them, it seems important to create digital methods for social connection.

Recommendation 20: *Organize virtual social events.* Use these to encourage bonding within teams and mixing across teams. Consider including a little time for socialization at meeting starts while people arrive.

This concern is particularly pronounced for workers who joined after the onset of the pandemic, since they have experienced Sandia as it experiences a major transition to hybrid work. Some are concerned that newer employees will not be as loyal to Sandia or that they will not appreciate its mission, resulting in personnel churn. This concern is also tied into fears that for CCR in particular, programming and IT in private industry or other national laboratories will be able to attract away Sandia employees, since a job transition may no longer require relocation to the new site. Though from a high level, Sandia itself seems concerned with this, its primary efforts have been power points or videos; CCR should strive to take this further and ensure that newer Sandians are getting the information, support, and relationships they need to be successful.

Recommendation 21: *Integrate new Sandians to the workforce and culture.* CCR should devise ways of connecting with Sandians who joined after the pandemic and ensuring ongoing support as they begin their careers here. In addition to connection, ensure that they can understand, participate in, and contribute to Sandia culture. Gather data on how post-pandemic employees are integrating as compared to pre-pandemic employees.

2.1.7. Policy Confusion

A number of working group discussions surrounded policy. The major finding was that there was considerable confusion around existing policy within CCR and Sandia.

Perceived Policy	Actual Policy
Workers are required to be onsite every 6-8 weeks	Onsite requirements are dependent on telework agreements as approved by managers
Travel less than two weeks in advance cannot be scheduled	Travel may still be accepted, but there must be justification for late travel
Cameras must be on	No policy

Table 2-2. Sample policy misperceptions

In addition to these policy misperceptions, it was also clear that there was confusion about why certain policy existed, fostering distrust. For example, it was not clear why there was a significant difference between someone who telecommuted more or less than 40% of the time. There was confusion about office phone policy for telecommuters and whether onsite phones could forward to cell phones or email. It was also ambiguous if it was permissible for a remote worker to work in a space such as a coffee shop or publicly rentable workspace (for example, a WeWork ²) if they restricted the information level and kept their device on their person at all times. Issuing Sandia cell phones as the main contact number for a remote employee having that number listed in the

²<https://www.wework.com/solutions/wework-all-access#amenities-full>

directory as their “desk” phone would be another solution; at least one committee member has employed this approach. Lastly, some people believed that it was ambiguous how much they were allowed to telework; however, that should be resolved as the center was recently asked to carefully review telework agreements, which should include expectations about onsite frequency.

Recommendation 22: *Encourage regular telework agreement assessment.* Ensure that agreements are mindful of project needs and employee time, as well as accurately reflect how MOWs are spending their time.

Recommendation 23: *Regularly assess and disseminate hybrid work policy.* Continue to assess hybrid work policy, considering its impact on all MOWs and incorporating new data as it is gathered. Communicate it to all CCR MOWs, including onsite workers, so that the entire Center has a shared understanding of what is expected.

2.1.8. Remote Execution of Classified Work

For existing remote workers, it is already difficult to do much classified work unless they travel on a regular cadence (one worker travels once per month to accommodate this). One worker noted that for classified work, it was frustrating because there is no way to do a simple secure call without traveling all the way to Albuquerque. Many respondents to the survey were concerned that over time, it would be difficult to recruit people to work on classified projects. Between the increasing percentage of remote workers and the advantages of not having to commute or contend with the restrictive nature of classified work, fewer and fewer people may be willing or able to do so. Though this is a substantial concern, CCR and its director are making steps toward remote execution of classified work that may alleviate this concern. Due the level of concern demonstrated, though, it is worth reiterating that this effort exists.

Recommendation 24: *Remind CCR of ongoing remote classified efforts.* To the extent possible, remind and inform CCR MOWs that there are ongoing efforts to demonstrate execution of classified work at properly secured remote locations that should help address these concerns. Keep MOWs up to date on progress made.

2.1.9. Evaluation of Work Performance

There are concerns about worker evaluation in the hybrid environment, both for remote and onsite workers. Onsite workers fear that they will be penalized for lower output due to the restrictions of commuting or working in offices, whereas remote workers fear they will be penalized for failing to make strong social ties with people who could advocate for their promotion and their ideas. For remote workers, this is a concern for formalized processes, such as LDRD, where “socialization” is critical, and promotion, often a socio-political as well as achievement-oriented process. It is also a concern for less formalized processes, such as simply making connections with senior management. One survey respondent expressed concern that remote workers who do not travel often will be passed over for promotion, as they felt that workers who travel with senior

management more often will be promoted more readily. Another survey respondent felt that remote workers are siloed from their colleagues, reducing the odds that they will be recognized for their work.

Recommendation 25: *Ensure performance reviews are equitable.* CCR should work to ensure that performance evaluation considers MOW performance without any penalty for remote or onsite status, and communicate any changes to all employees.

2.1.10. *Miscellaneous Problems and Recommendations*

For virtual meetings in particular, many felt it was difficult to tell what information level was allowed to be discussed. This resulted in awkward problems like people being afraid to identify phone-ins or call out the presence of foreign nationals. As an illustrative example, one committee member asked three people at a meeting what the information level was, and got three responses: Unrestricted Unlimited Release, Controlled Unclassified Information, and Controlled Unclassified Information, Export Controlled. Given the nature of work at Sandia, and the presence of non-trivial numbers of foreign nationals at CCR, this is a problem. Choosing to only identify foreign nationals creates social problems and the potential for “othering” them.

Recommendation 26: *Devise a clear information level policy for hybrid meetings.* CCR should establish a policy that information levels must be declared at the start of a meeting, and that phone-ins are positively identified before proceeding. Consider treating all meetings like classified meetings, where all participants identities and information clearance is verified.

For Office Administrative Assistants (OAAs), their offices are currently located in hallways. However, this placement is predicated on the idea that most people are onsite. With many people working remotely, their hallway availability does not have the same utility. Additionally, this can be detrimental for their getting things done. As an example, if an OAA needs to discuss someone’s social security number, that information is private and cannot be shared in the hallway if someone is present, so they have to pause the work until that person is gone. This actually renders OAAs less available for remote workers, who will never be physically present but may need them to work with confidential information.

Recommendation 27: *Reconsider OAA “availability” in a hybrid environment.* Consider what it means for OAAs to be available to other MOWs, as well as private offices to work with confidential information.

Some remote work agreements have onsite requirements that do not create value for the worker or Sandia, wherein the worker does the same work they would at home but in an onsite location instead. One employee described their experience for a mandatory onsite period as “doing the same work I do at home, but now in a windowless touchdown space.”

Recommendation 28: *Ensure thoughtful and intentional remote work arrangements.* Encourage line managers to avoid requiring onsite visits when they are not needed, and to use that time effectively. Ensure that remote workers are set up to communicate and work effectively with their team in a hybrid environment to reduce the need for onsite visits.

Some workers require specialized hardware that should be hosted on-premises, such as a GPU machine for machine learning. However, remote workers and telecommuters who do not come in more than 40% of the time do not have an office space to place this specialized hardware. There is a machine room for the Center, however, its existence and how to use it are not well-publicized.

Recommendation 29: *Publicize the Center’s machine room and share details on usage.* CCR should publicize the Center’s machine room and provide clear usage guidelines to enable remote workers to store their specialized hardware in it. Consider appointing someone to coordinate the room’s usage and ensure that hardware in it is properly managed.

When remote workers begin at Sandia, they are often using the Desktop as a Service (DaaS). However, the DaaS performance for video streaming over browser is very low, to the point where the audio may be totally incomprehensible. This presents an issue, because new employees often spend considerable time watching video tutorials for educational modules. Additionally, the DaaS is Windows, despite many CCR employees preferring Mac or Linux systems.

Recommendation 30: *Provide new CCR MOWs with performant solutions.* CCR employees starting as remote workers should be provided with either a more performant DaaS or a loaner laptop. Avoid system limitations causing new MOWs to have a less successful onboarding.

2.2. Opportunities for Growth

In general, problems have actionable recommendations. For problems that do not have easily actionable recommendations, the problem is described and followed with a sample “success story.”

2.2.1. MS Teams Technical Capability Gaps

MS Teams has lagged behind other videoconferencing platforms. For example, the “Breakout Room” feature, which allows people to split into small groups from a main meeting and then easily rejoin it, is relatively recent and many are unaware of how to use it, though Zoom has had it for several years. Though MS Teams has a direct messaging capability, it is less seamless than that of Zoom’s, and MS Teams chats do not have threads which allow parallel discussions. This exacerbates some of the problems of hybrid meetings. Some features of MS Teams are also available only on the SRN, which renders it less useful for Foreign Nationals. With all of these factors, resentment may grow for MOWs who know that there exist more complete and accessible videoconferencing solutions.

Success: *A team is able to quickly put together a hybrid meeting. During the meeting, they use breakout groups to start brainstorming about a new feature for a software product. As they are discussing, people are able to have parallel text conversations in the chat to refine ideas or disseminate information without disrupting the flow of the conversation. Foreign Nationals are able to fully participate and view the chat after the meeting ends.*

Though MS Teams does lack some capabilities compared to other services, it is also the case that no services offer some capabilities. For example, several individuals thought it would be desirable to have the capability to have an audio/video “sidebar” conversation, wherein they could maintain a small, separate conversation while still retaining the audio and video of a main session. Currently this is mostly done through instant messenger, but that may not be able to keep pace as quickly as voice in some circumstances, and some people may find this too difficult to pay attention to.

Success: *A presentation is being given about a mathematical model. A student would like to quickly ask their mentor why a certain assumption was made in the model. The student and mentor are able to quickly discuss the assumption and clarify it, or decide to pose the question at the end of the presentation, without losing the ability to continue following the presentation.*

MS Teams partially implements availability and schedule viewing of co-workers through the Scheduling Assistant. However, it does not indicate whether someone is physically joining a meeting, or if they are onsite at all. It also does not indicate for meeting RSVPs whether somebody is attending in person or virtually. For onsite workers, this means that they may be asked to attend meetings they planned to attend in person that are impossible to make because they are so close in time but not physically close together. For remote workers, it makes it difficult to gauge the best way to contact someone if they have different preferred contacts for onsite vs telecommuting.

Success: *Someone wants to organize a brainstorming session that is hybrid. In order to figure out what kind of space they need to use to support this, they look at attendee responses and can quickly determine how many are in person vs. remote. When someone recommends adding another person to the brainstorming session who is usually onsite, it is easy for the organizer to tell if it's possible for them to make it from another meeting.*

2.2.2. Lack of Cross-Project Knowledge for Remote Workers

For remote workers, it can be difficult to ascertain what projects and people exist at Sandia outside of their portfolio at work. They are not very likely to organically run into other workers in the same way, even within CCR, let alone at other Sandia centers and divisions. It is possible that routine “flash talks” could help mitigate this, wherein projects have members give 5 minute talks at the department level or greater in order to build awareness. Other mixers could be organized with the express purpose of exposing people to different projects, much like poster sessions at a conference. But it is difficult to know how to solve this without adding additional meetings, which may suffer from a lack of both attendance and organizers/presenters.

Success: *A remote worker is exposed to a project that is not directly related to their work a few times a year, steadily expanding their network of colleagues at Sandia. Eventually, this manifests in a collaboration that would have been otherwise impossible.*

2.2.3. A Lack of Incentive to Come Onsite

Though this report focuses on hybrid needs (i.e., telecommuting and virtual), a considerable problem reported by workers that come onsite more often is that when they come there aren't very many people there. Additionally, some people will come onsite expecting others to be there only to find that they are not (this relates to the discussion worker status in 2.2.1 and space layouts in 2.1.5). Many workers report finding it difficult to do some work on the onsite network due to its restrictions (e.g., the removal of active web content breaks a lot of websites we need on a daily basis), whereas people working remotely can simply disable the restrictions or perform externally focused work on their personal devices. Whether this content is erroneously blocked or not, CCR employees often need access to these sites in order to perform external collaborations or access external materials. The deployment of a "hotel network" for accessing materials on personally owned phones or laptops may be useful for achieving this goal and giving onsite employees comparable resources to remote employees. Individuals also found it difficult to book and use touchdown spaces in some cases if they didn't have a dedicated office (which fewer workers now do). Some rooms even require using an OAA to book, which adds additional complexity and time. This, combined with the need to commute, can deter people who are otherwise interested in spending more time onsite from doing so. Addressing these problems would help create positive incentives to come onsite and add value to being in the office.

Success: *A part-time telecommuter wants to come in on a day when there will be other people in the office. They are able to find a good day to so, and straightforwardly book a room that will meet their needs. They are able to attend meetings both remotely and in person without undue interruption, and access all materials online that are required to do their job. They spend some time chatting with people in a collaborative space or hallway, and walk away with new ideas about some projects.*

2.3. Conclusion

Executing hybrid work effectively requires a considerable amount of planning and data gathering. This working group has formulated recommendations and visions for future growth and success to the extent possible with its relatively small sample size of CCR. Most likely, more data is required in order to guide CCR hybrid strategy and refine ideas. Additional work must be done to evaluate new tools, approaches, and spatial layouts to increase the efficiency and effectiveness of a hybrid workforce. Though some of this work may be achieved through the establishment of working groups such as this one, it is difficult to obtain time commitments sufficient to the task. As a result, the working group issues one final recommendation.

Recommendation 31: *Establish a new “Communications and Collaborations Coordinator” position.* Make this MOW responsible for evaluating tools and making recommendations, conducting regular training, and maintaining conference / collaboration rooms and equipment. They should be responsible for continuous evaluation of CCR hybrid work strategies, obtaining data on the effectiveness of these strategies, and coordinating experiments to devise new ways of performing hybrid work.

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APPENDIX A. Significant Artifacts

A.1. Survey

The Hybrid Working Group has been tasked by our director Jen Gaudioso with developing recommendations for 1400 to enhance our hybrid (onsite/telecommuting/remote worker) culture and workforce. Please contribute by answering the following questions:

1. What has been your hybrid experience, either as a hybrid worker yourself or onsite working with hybrid workers.
 - a) Success stories.
 - b) Things that are embarrassingly bad.
 - c) Things that could be improved.
2. What might enhance hybrid work or culture? Wild experiments are welcome!
3. Additional comments?

Optionally, please include your hybrid work status, years at Sandia, and if you'd like to discuss more (via phone or email).

A.2. One Pager

The 1400 Hybrid Group has been working to establish some preliminary recommendations for center leadership ahead of the May 4th center leadership retreat. In addition to these recommendations, we also identify some points for which we have found concerns but have not yet identified actionable recommendations. These are synthesized from 15 survey results, the 9 committee members, and weekly meetings to discuss survey results and recommendations. Recommendations for Leadership:

1. Establish new "Communications and Collaborations Coordinator" position, responsible for evaluating tools and making recommendations, conducting regular training, and maintaining conference / collaboration rooms and equipment.
2. To improve internal and external collaboration for all staff members, dedicate resources to setup and maintain internal SRN and SON platforms, e.g. Slack, Overleaf, Weights and Biases, Mattermost, Teams, etc. This should include a viable virtual whiteboard.

3. Ensure that all conference rooms are easy and reliable to use – currently, staff cannot be confident that a room will be functional or that they will know how to use it when they walk through the door.
4. Conduct regular center-wide interactive training / town-hall sessions for all center staff (not just remote workers) covering hybrid work issues such as: conducting effective hybrid meetings, tips and tricks, establishing norms, what is required versus what is good etiquette, discussing problems, and introducing new tools, solutions, and policy changes.
5. “Cameras on or off” is the most contentious hybrid work topic by far. Resist the temptation to adopt sweeping policies in this area, brief the staff on empirical studies on the subject, and encourage teams to use cameras with intentionality. Individuals have final say on their own camera use.
6. Establish and model minimum requirements for the start of every meeting: identifying the information level and positively identifying phone call-ins.
7. Establish sufficient physical space to host specialized hardware for remote workers.
8. Encourage regular department-level offsites to help build community in person.
9. Organize in person meets in remote locations, e.g. a mixer for Sandians or project retreat.
10. Organize virtual “office hours” and social events, to encourage socialization and collaboration among local and remote staff.
11. Organize more internal workshops and conferences (ML/DL workshop is a good example) that can offer meaningful reasons to travel onsite, and ensure that remote staff have funding to do so.

Issues which we are grappling with but do not yet have recommendations for:

1. A high level of dissatisfaction with the quantity and quality of meetings at Sandia, with one respondent describing it as a “vicious cycle” wherein people are so busy that you can’t quickly reach them, and thus have to schedule a meeting to talk, increasing the number of meetings and worsening the problem.
2. Considerable concern about social connection and communication of expectations, particularly for people who joined after the onset of the pandemic. This is also often tied into concerns about emerging creativity, idea generation, and collaboration. Some recommendations (9-12) address this, but more work is likely required to fully address this point.
3. Many people commented that collaboration is being stifled in a hybrid environment due to a lack of tools to make it effective. Recommendation (2) seeks to alleviate this but more thought is required to fully address.
4. There is widespread concern about execution of classified mission needs as more people become telecommuters or fully virtual, potentially reducing the pool of people available to come on-site for classified work.

5. There is a mismatch between the on-site spaces and what on-site workers need.

A.3. Presented Recommendations

In the presentation to the Center Leadership Team (CLT), Tim Shead created a presentation consisting of a countdown of recommendations, shown in in Table A-1, which was shown to the Center Leadership Team on June 5, 2023. Because the presentation was given a limited time, recommendations are succinct and do not necessarily reflect the full scope of discussion and ideas. The report breaks some of these succinct presentation recommendations into multiple recommendations, and this is reflected in the table.

Number	Recommendation	Equivalent
18	Establish and model minimum requirements for the start of every meeting: identifying the information level and positively identifying phone call-ins.	26
17	Establish sufficient physical space to host specialized hardware for remote workers.	29
16	Arrange ongoing monitoring for Sandians who joined after the pandemic, to ensure that they are thriving.	21
15	Many Sandians complain about a proliferation of meetings and time fragmentation, post-pandemic.	4, 6-9
14	Work on remote classified spaces needs to be communicated more broadly. This probably isn't sufficient to address widespread concern that there aren't enough personnel for classified mission work.	24
13	Critical skills programs ¹ (e.g. Weapons Interns) should be restructured to make it easier for remote workers to participate, such as compressing schedules.	2
12	Some remote work agreements may include regular mandatory on-site visits that do not create value. Ensure that employees and line managers are bringing thoughtfulness and intentionality to remote work arrangements.	22-23
11	Organize more internal workshops and conferences (ML/DL workshop is a good example) that can offer meaningful reasons to travel onsite, and ensure that remote staff have funding to do so.	16
10	To improve internal and external collaboration for all staff members, dedicate resources to setup and maintain platforms for use inside and outside SNL networks, e.g. Slack, Overleaf, Weights and Biases, Mattermost, Teams, whiteboarding, etc. Note that this must be an ongoing, continuous process.	12

¹In the report, the language was changed to “workforce training” after feedback from CLT that this term had a more specific meaning

9	Organize in person meets in remote locations, e.g. a mixer for Sandians or project retreat. Consider creating un-classified collaboration spaces, too.	18-19
8	Organize virtual “office hours” and social events, to encourage socialization and collaboration among local and remote staff.	14, 20
7	Encourage regular department-level offsites to help build community in person.	17
6	“Cameras on or off” is an extremely contentious topic. Resist the temptation to adopt sweeping policies in this area, brief the staff on empirical studies on the subject, and encourage teams to use cameras with intentionality. Individuals have the final say on their own camera use.	3
5	It is currently assumed that OAAs need to be onsite and in the open to be available, but with large portions of the workforce working remotely, the meaning of “available” needs to be rethought, including the possibility of private offices for OAAs.	27
4	There is a mismatch between on-site spaces and what on-site workers require, experimentation with alternatives is needed. For example: collaborative team spaces surrounded by individual offices could provide a “critical mass” of in-person interaction. Try starting with small, medium, and large team rooms, allowing them to be flexibly scheduled to see who uses them effectively and how.	7, 11
3	Ensure that all conference rooms are easy and reliable to use – currently, staff cannot be confident that a room will be functional or that they will know how to use it when they walk through the door.	6
2	Conduct regular center-wide interactive training / town-hall sessions for all center staff (not just remote workers) covering hybrid work issues. Suggested topics: conducting effective hybrid meetings, tips and tricks, establishing norms, what is required versus what is good etiquette, discussing problems, and introducing new tools, solutions, and policy changes.	1, 5, 23
1	Establish new position: “Communications and Collaborations Coordinator” Responsible for conducting regular training, setup and maintenance of conference / collaboration rooms and equipment, making and disseminating policy, and evaluating / recommending tools.	31

Table A-1. Recommendations presented to CLT by Timothy Shead

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